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PROJECT: Audio Oscillator DATE: Feb 56.

I Tube oscillator presently discontinued due to the following problems;

A. Power supply requirements are such that the package size would be increased too much.

B. The frequency control is not stable enough to hold within specified tolerances

C. The reader not counter is not easily adapted to a potentiometer such as is used for the frequency control in the tube (oscillator), the gear train necessary is quite large and depending upon the type potentiometer used the gear ratios vary from 400:1 TO 135:1

D. Two bands are necessary due to oscillator instability in the middle of each frequency range.

II In view of the ~~B~~ above, work has been done on a beat frequency oscillator which being crystal-controlled is accurate within the tolerances outlined in the specifications.

~~The [illegible]~~

This document is part of an integrated file. If separated from the file it must be subjected to individual systematic review.

WORK DONE: DATE 1 FEB 56

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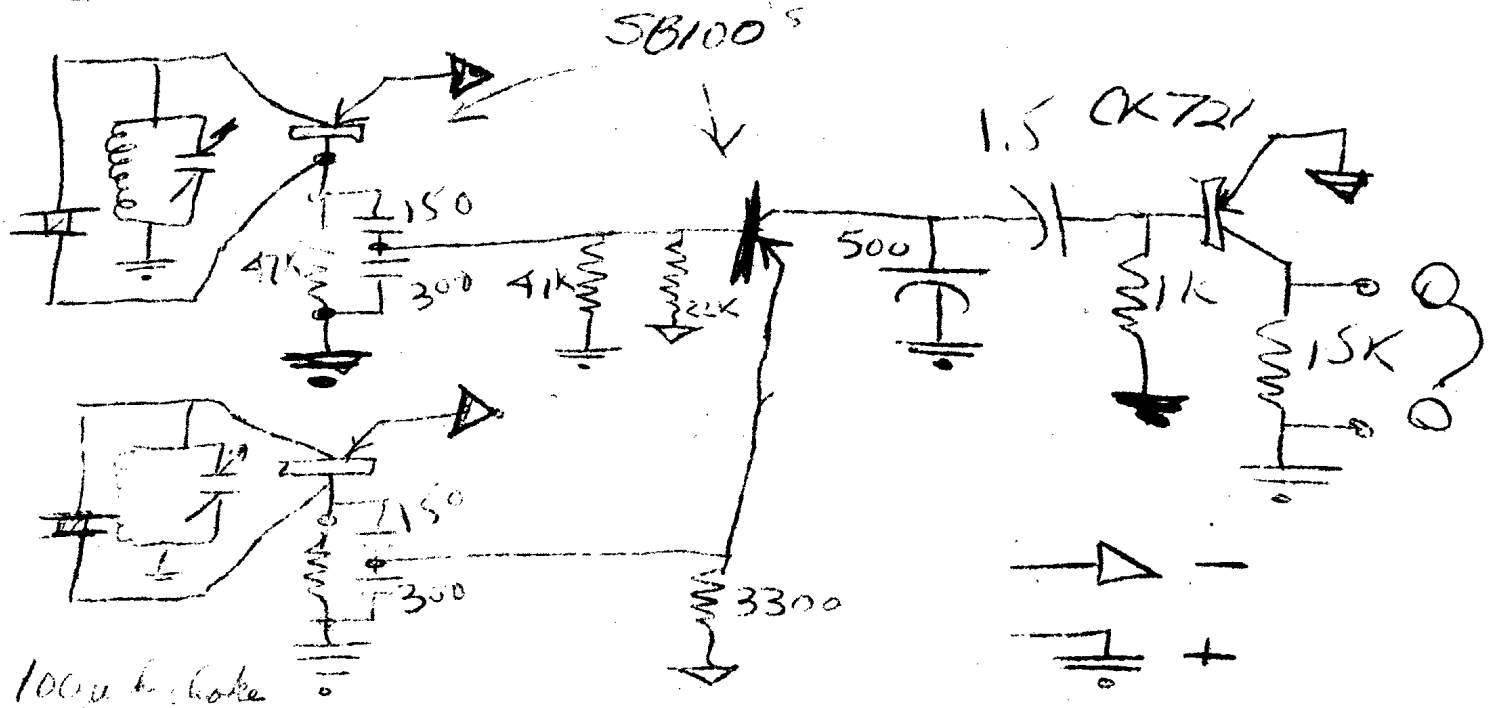
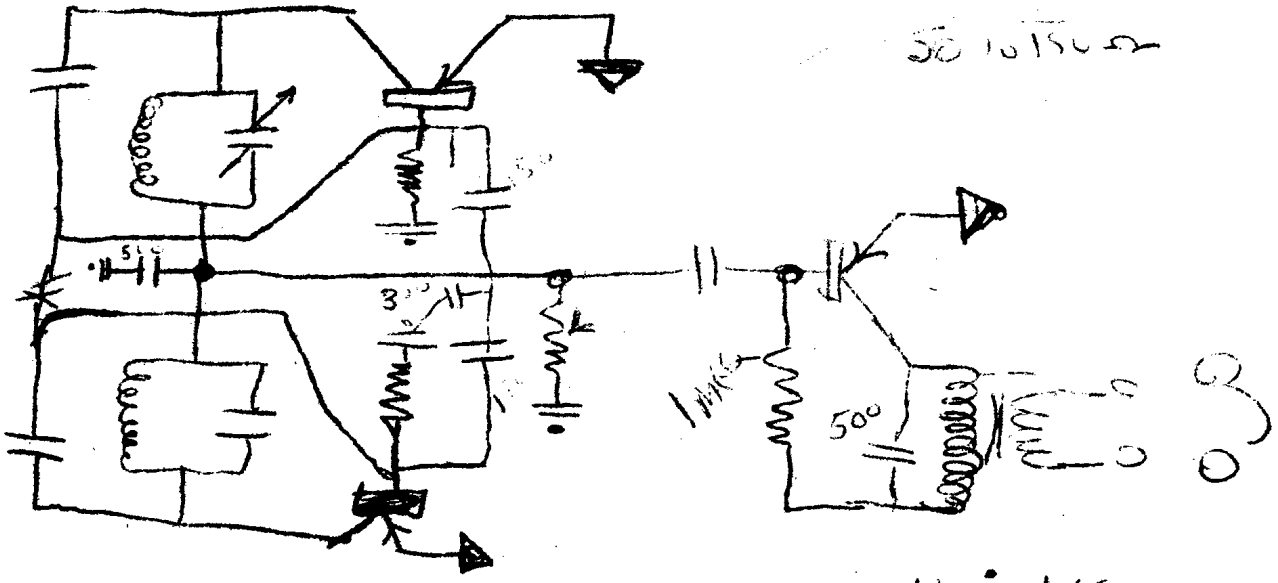
PROJECT: Audio Oscillator BOOK 1 FEB 56 STAT 9

I First version



Thus unit functioned alright but tried to eliminate super to conserve space

II Final Version



WORK DONE: JFS DATE 1 FEB 56

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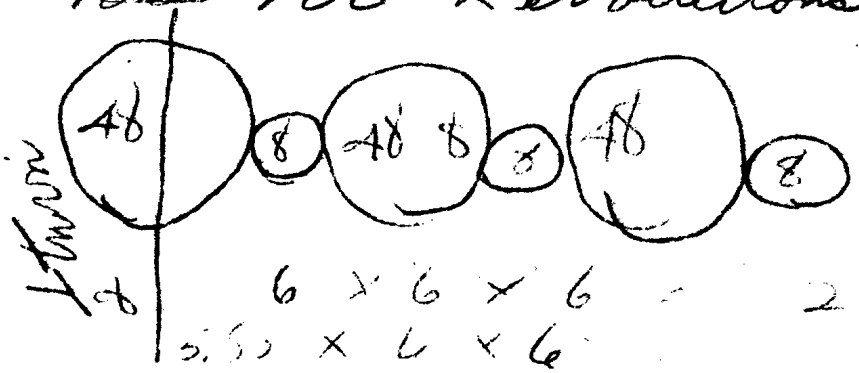
PROJECT: Transistorized Audio Oscillator DATE: 1 FEB 56

To adapt counter to Transistor Oscillator.

3 place counter.

Gear ratio 200:1

180° rotation of variable Capacitor = 100 revolutions of counter shaft.



With 74 teeth on capacitor drive gear the gear ratio = 198:1

Veeder Counter 1 turn = 10 numbers
" " 100 turns 1000 numbers

Talk with R & D.C. on making gear train layout

WORK DONE: JFS DATE

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PROJECT: Audio Oscillator DATE 16 Feb 56

Battery TR 113R 1.3 Volts

I drain = 1.65 MA
Osc Ic = 1.3 MA 2 - 30100's
Audio Ic = 35 MA 1 CK 721

~~Osc E~~

Osc Ec = 1.0 Volts
Audio Ec = 3.6 Volts
Audio Z in = 3 K
Audio Z out = 10K
Audio Gain = 35 DB

WORK DONE: OFS DATE 16 FEB 56

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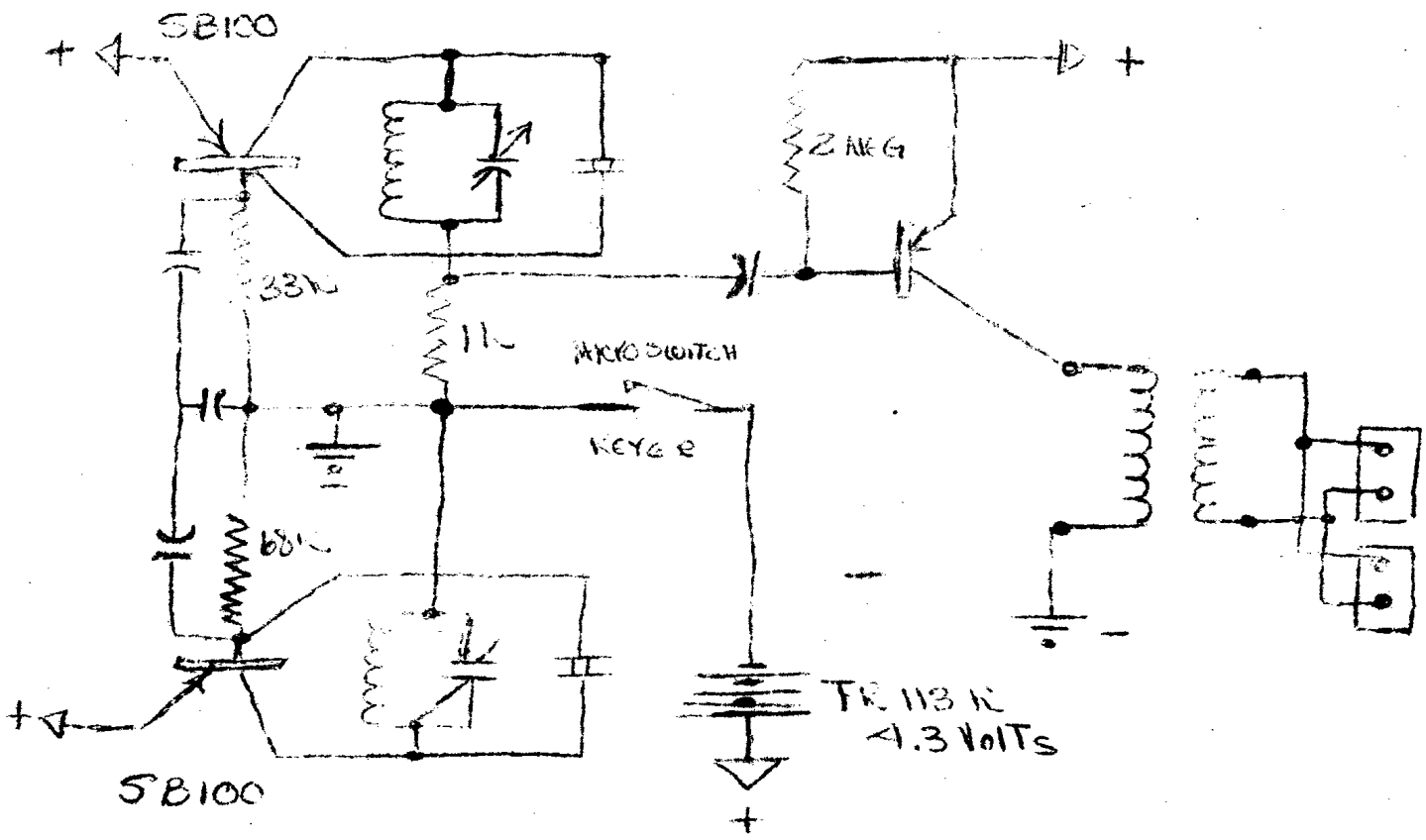
BOOK

PAGE 13

PROJECT: Linear Voltmeter

DATE 16 Feb 56



WORK DONE: JFS

DATE 16FEB56

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PROJECT: [illegible]-LATOR DATE 2MAR 56

BENCH TEST STABILITY CHECK

TIME 11:00 (10 MIN WARMUP)

	CPS	DRIFT	TIME
	30.5	0	11:00
	29.9	0.6	11:15
	31.4	.9	11:30
	33.0	2.5	11:46
	33.0	2.5	12:00
→	300+	0	12:01
	300+	0	12:16
	300+	0	12:30
	305	5.0	13:05
	3050+	0	13:07
	3050+	0	13:15
	3075	25.0	13:30
	3075	25.0	14:04
	1500	0	14:05
	1500	0	1420
	1500	0	1500
	100	0	1505
TEST BENCH →	98	2.0	1525
JARRED	99.4	0.6	1600
	30.5	0	1603
	30.9	0.4	1615
	30.9	0.4	1630
	30.9	0.4	1645

AFTER 120 HR BATTERY LIFE TEST FREQ STABILITY WAS CHECKED AT 30V FOR 1 hr. DRIFT = 3.5 cycles.

MONDAY 10:00 30.5
11:00 33.5

WORK DONE: JFS DATE 2MAR56

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PROJECT: AUDIO OSCILLATOR DATE 2MAR 56

GENERAL INFORMATION

I CAPACITORS

(a) BASE COUPLING CAPACITORS CHANGED TO SILVER MICA TYPE

(b) NC TRIMMER 7-45 μμfd Replaced with CV 30 INVAR (NEW TYPE)
PRIME REASON BEING TO FACILITATE TRIMMING AT LOW FREQ END OF FIXED OSCILLATOR

(C) SOME INSTABILITY may be caused by TH. Tuning shaft (spring mounting) of the air variable capacitor not being tight enough. Shaft spinning in hand comfort. This will be remedied by a bearing

(D) BATTERY LIFE TEST RUN from Feb 29 TO 5 MAR 56 — 120 TOTAL TIME.

BATTERY = TR 113R 4.39V (3.95V) ACTUAL MEASUREMENT

120 HR E = 3.8V
I = 1.8 MA

BATTERY TR113R SEEMS CAPABLE OF SUPPLYING POWER FOR 120 HRS

WORK DONE: JFS DATE 5MAR56

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PROJECT: QUAD OSCILLATOR DATE 2 MAR 56

GENERAL INFORMATION

I CAPACITORS

(a) BASE COUPLING CAPACITORS CHANGED TO SILVER MICA TYPE

(b) NC TRIMMER 7-45 μμfd Replaced with CV 30 MMAC (NEW TYPE)

PRIME REASON BEING TO FACILITATE TRIMMING AT LOW FREQ END OF FIXED OSCILLATOR

(c) SOME INSTABILITY MAY BE CAUSED BY THE TUNING SHAFT/BEARING ARRANGEMENT. AIR VARIABLE CAPACITANCE DOES NOT CHANGE APPRECIABLY WITH MECHANICAL VIBRATION SO THAT THE INSTABILITY IS PROBABLY DUE TO MECHANICAL MOVEMENT OF METAL PARTS. THIS WOULD BE REMEDIED BY A BETTER BEARING

(D) BATTERY LIFE TEST RUN FROM FEB 29 TO 5 MAR 56 — 120 TOTAL TIME.

BATTERY = TR 113 E 4.39 V (ACTUAL MEASUREMENT 3.95 V)

120 HR E = 3.8 V
I = 1.8 MA

BATTERY TR 113 E SEEMS CAPABLE OF SUPPLYING POWER FOR 120 HRS

WORK DONE: JFS DATE 5 MAR 56

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